

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claim 15 is requested to be cancelled without prejudice or disclaimer. Claims 2, 30 and 32 are currently being amended to include features from claim 15. Claim 6 is being amended in a formal manner to add a period at the end of that claim. No new matter is being added.

This amendment changes and deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 2-14 and 16-36 are now pending.

Rejections under 35 U.S.C. §§ 102 and 103

Claims 2-4, 7-15, 17, 18, 27-30 and 33-35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,688,279 to Ishikawa et al. (hereafter “Ishikawa”) in view of U.S. Patent No. 6,412,276 to Salvat et al. (hereafter “Salvat”). Claims 5, 6, 19, 31, 32 and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa in view of U.S. Patent No. 4,685,290 to Kamiya et al. (hereafter “Kamiya”). Claims 16, 20, 21 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa in view of U.S. Patent No. 6,804,952 to Sasaki et al. (hereafter “Sasaki”). Claims 22-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa in view of U.S. Patent No. 6,796,118 to Kitahara (hereafter “Kitahara”). Applicant respectfully traverses these rejections for at least the following reasons.

Independent claim 2, as amended, recites “wherein the controller is configured to perform the preliminary fuel injection at such a timing as to cause a heat releasing process of the preliminary combustion to start before compression top dead center and to end after

compression top dead center.” The references applied in the rejection fail to disclose at least this feature of claim 2.

Ishikawa does not disclose performing a preliminary fuel injection at such a timing as to cause a heat releasing process of the preliminary combustion to start before compression top dead center and to end after compression top dead center. Ishikawa discloses a compression-ignition internal combustion engine including a controller 26 for conducting pilot fuel injections and main fuel injection. In Ishikawa, the pilot fuel injections (3) and (4) are controlled to terminate the combustions of the pilot injections before the top dead center (0° ATDC) as shown in FIG. 3. Further, the pilot fuel injections (1) and (2) are controlled so as to produce no distinct peak of combustion, as disclosed in Ishikawa in col. 7, line 65 to col. 8, line 7. Thus, Ishikawa fails to disclose or suggest all the features of claim 2.

Salvat fails to cure the deficiencies of Ishikawa. Salvat was cited in the Office Action for allegedly disclosing the features of claim 15, which have now been incorporated into claim 2. With respect to the features of claim 15, the examiner cites to FIG. 4 of Salvat. FIG. 4 of Salvat, however, merely shows the incylinder pressure. The heat releasing condition of the combustion of Salva is not shown in FIG. 4. Moreover, the Salvat system performs fuel injections on the expansion stroke, as disclosed in col. 4. The Salvat system does not perform fuel injections to produce the preliminary combustion at or near top dead center such that the heat releasing process of the preliminary combustion starts before compression top dead center and ends after compression top dead center. Rather, in Salvat, the combustion of fuel of pilot injection is continuous with the combustion of the main fuel injection. Thus, even if combined, Ishikawa and Salvat fail to disclose all the features of claim 2.

Kamiya, Sasaki and Kitahara were cited for other features of the claims, but fail to cure the deficiencies of Ishikawa and Salvat.

Independent claims 30 and 32 respectively recite “the preliminary fuel injection being performed at such a timing as to cause a heat releasing process of the preliminary combustion to start before compression top dead center and to end after compression top dead center” and “the means for controlling the fuel injection including means for performing the preliminary

fuel injection at such a timing as to cause a heat releasing process of the preliminary combustion to start before compression top dead center and to end after compression top dead center” and are thus patentable for reasons analogous to claim 2.

The dependent claims are patentable for at least the same reasons as their respective independent claims, as well as for further patentable features recited therein.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date Feb 8, 2008

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